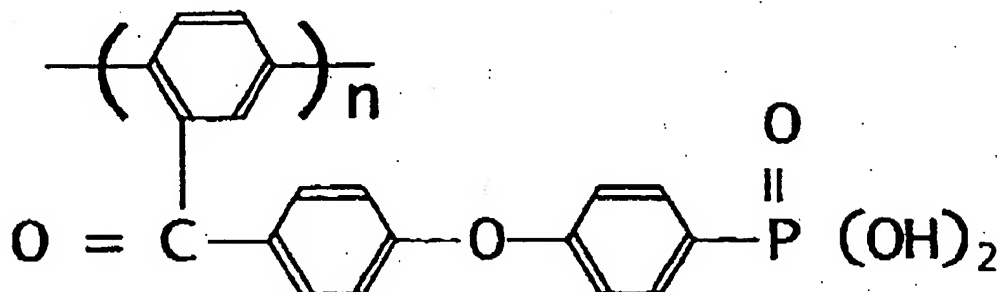


WHAT IS CLAIMED IS:

1. Phosphonated poly(4-phenoxybenzoyl-1,4-phenylene) having a following repeating unit.



(It is to be noted in the above formula that "n" represents a number of 5 to 10000.)

2. A method for synthesizing the phosphonated poly(4-phenoxybenzoyl-1,4-phenylene) according to claim 1, comprising:

halogenating a phenoxy group of the poly(4-phenoxybenzoyl-1,4-phenylene) such that the phenoxy group is converted to a halogen group;

phosphonic acid esterifying the halogen group such that the halogen group is converted to a phosphonic acid ester group; and

deesterifying the phosphonic acid ester group.

3. An antioxidant including the phosphonated poly(4-phenoxybenzoyl-1,4-phenylene) according to claim 1.

4. A high-durability polymer electrolyte composite including a fluoropolymer electrolyte and the phosphonated poly(4-phenoxybenzoyl-1,4-phenylene) according to claim 1.

5. The polymer electrolyte composite according to claim 4, wherein a percentage of the phosphonated poly(4-phenoxybenzoyl-1,4-phenylene) content is equal to or higher than 0.1 mass % of the entire polymer electrolyte composite.

6. The polymer electrolyte composite according to claim 5, wherein a percentage of the phosphonated poly(4-phenoxybenzoyl-1,4-phenylene) content is equal to or higher than 5 mass % of the entire polymer electrolyte composite.

7. The polymer electrolyte composite according to claim 4, wherein an antioxidant other than the phosphonated poly(4-phenoxybenzoyl-1,4-phenylene) is added to the polymer electrolyte composite, and a percentage of all antioxidants is 0.005 to 50 mass % of the polymer electrolyte composite.
8. The polymer electrolyte composite according to claim 7, wherein a percentage of the all antioxidants is 0.01 to 10 mass % of the polymer electrolyte composite.
9. An electrode for a fuel cell comprising:
the polymer electrolyte composite according to claim 4 and
a catalyst support conductive material.
10. A fuel cell comprising the electrode according to claim 9.